

PATENT  
Patent App. Ser. No. 10/578,739  
The Eclipse Group Docket No. LJN09001USU (5969-101)

### THE CLAIMS

1-77. (Cancelled).

78. (New) A method of scalable multifunctional network communication between presentation devices and service providers, comprising:

receiving at a headend control computer, via an uplink channel, upstream messages from one or more consumer premise equipment (CPE) units and sending from the headend control computer, via a downlink channel downstream messages to the one or more of the CPE units;

receiving transmission time interval requests via the uplink channel at the headend control computer from one or more of the CPE units or from the service providers;

collecting received requests for transmission time intervals on the uplink channel in a database and arranging at least some requests from the database in a request queue update message at the headend control computer; and

sending the request queue update message via the downlink channel to at least some of the CPE units and processing the request queue update message to update a master request queue in the headend control computer,

wherein the headend control computer receives messages from one or more of the CPE units and transfers them to a service provider control subsystems, and the headend control computer receives messages from the service provider control subsystem and transports them to the CPE units.

79. (New) The method according to claim 78, wherein the uplink and downlink messages include service messages bearing service data and control messages including data used to manage and regulate network functions.

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80. (New) The method according to claim 79, further including an uplink Aloha slot burst interval serving to provide a plurality of message requests received from one or more of the CPE units, said burst interval being scheduled by the headend control computer.

81. (New) The method according to claim 80, further including receiving at the headend control message request from one or more of the CPE units and arranging them in a request queue update message and sending it downstream to one or more of the CPE units.

82. (New) The method of claim 80, further including receiving service and control messages from one or more of the CPE units at the headend control computer in response to the assigned time slots of the request queue.

83. (New) The method according to claim 82, further including receiving at the headend control computer the service messages from one or more of the CPE units and in turn distributing them to the provider control subsystems and to headend network control circuitry.

84. (New) The method according to claim 78, further including sharing at least one channel using time division multiple access.

85. (New) The method according to claim 78, further including modulating, transmitting, acquiring, tracking and demodulating signals on the uplink and downlink.

86. (New) The method according to claim 78, further including tracking the phase of a master system clock via a local clock.

87. (New) The method according to claim 86, further including locking the uplink to the downlink for clock synchronization.

88. (New) The method according to claim 86, further including acquiring and tracking interval boundaries on the downlink.

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89. (New) The method according to claim 78, wherein messages are carried in intervals, and at least some include a message header.

90. (New) The method according to claim 78, further including organizing and transmitting control messages.

91. (New) The method according to claim 78, further including using message transmit queues and message receive queues in the headend control computer..

92. (New) The method according to claim 78, further including using at least one request queue at the headend computer control.

93. (New) The method according to claim 78, further including monitoring the downlink selectively inputting messages received at the headend control computer and maintaining downlink synchronization.

94. (New) The method according to claim 78, further including demodulating and decoding uplink messages via the headend computer control.

95. (New) The method according to claim 78, further including using a receive router at the headend computer control for monitoring the received messages and routing them in accordance with associated requests.

96. (New) The method according to claim 78, further including using transmission schedulers at the headend computer control for affecting transmission of messages.

97. (New) The method according to claim 96, further including regulating the length and frequency of transmitted messages so that they are within desired range-of values by the transmission scheduler.

98. (New) The method according to claim 80, further including collecting requests in pools and forming the request queue update message.

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99. (New) The method according to claim 98, further including receiving requests update messages and placing the messages contained therein in a request queue under the control of an insertion algorithm.

100. (New) The method according to claim 78, further including determining an order of upstream message selection for transmission based on characteristics of the upstream message.

101. (New) The method according to claim 78, further including generating requests for Aloha slot burst intervals by means of an Aloha slot supply algorithm in the headend control computer.

102. (New) A headend unit for scalable multifunctional network communication between consumer premise equipment (CPE) units coupled between presentation devices and service control subsystems, comprises:

a receiver coupled to the headend control computer configured to receive upstream messages from the CPE units and a transmitter coupled to the headend computer configured to send downstream messages to the CPE units; and

a database configured to store received requests for transmission time intervals on the uplink channel, at least some requests from the database being arranged in a request queue update message at the headend control computer; wherein the headend control computer is configured to receive transmission time interval requests from the CPE units or from the service providers, configured to send the request queue update message to at least some of the CPE units, to process the request queue update message to update a master request queue in the headend control computer.

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wherein the headend control computer receives messages from the CPE units and transports them to the service provider control subsystems, and the headend control computer receives messages from the service provider control systems and transports them to the CPE units.

103. (New) The headend unit according to claim 102, wherein the messages include service messages bearing data and control messages in the form of request messages.

104. (New) The headend unit according to claim 102, wherein the headend computer is coupled to a group of service interface modules.

105. (New) The headend unit according to claim 102, further including means for receiving requests from the CPE units and arranging them in a request queue update message and sending it downstream to the CPE units.